NAME:
AMMONIA, ANHYDROUS

CAS Registry Number: 7664417

Label: NONFLAMMABLE GAS UN/NA: 1005

NFPA Ratings : Health: 3 Flam: 1 React: 0 Spec:

GENERAL DESCRIPTION:

Anhydrous ammonia is a clear colorless gas with a characteristic odor. It is used as a fertilizer, as a refrigerant, and in the manufacture of other chemicals. Although it is classed as a nonflammable gas, it will burn within certain vapor concentration limits, and the fire hazard will increase in the presence of oil or other combustible materials. Its "combustibility" is definitely not a common problem in the event of leakage. It is shipped as a liquid under pressure. Contact with the liquid can cause frostbite. It is soluble in water forming a corrosive liquid. Although ammonia is lighter than air, the vapors from a leak initially hug the ground. ((C)AAR, 1986)

FIRE & EXPLOSIVE HAZARD:

Mixing of ammonia with several chemicals can cause severe fire hazards and/or explosions. Ammonia in container may explode in heat of fire. Avoid mixing with other chemicals and water. Incompatible with many materials including silver and gold salts, halogens, alkali metals, nitrogen trichloride, potassium chlorate, chromyl chloride, oxygen halides, acid vapors, azides, ethylene oxide, picric acid, and many other chemicals. (EPA, 1986)

FIRE FIGHTING:

Small fires: Dry chemical or carbon dioxide. Large fires: Water spray, fog or foam. Apply water gently to the surface. Do not get water inside container. Move container from fire area if you can do it without risk. Stay away from ends of tanks. Cool containers that are exposed to flames with water from the side until well after fire is out. (EPA, 1986)

PROTECTIVE CLOTHING:

Wear positive pressure breathing apparatus and full protective clothing. (EPA, 1986)

SUIT MATERIAL COMPATIBILITY (Based on ACGIH, 1985):

BUTYL Good Resistance/Limited Data.
CHLOROBUTYL
CHLOR RUB
CPE
CR 39
EVA/PE
FEP OR TFE
HYPALON

NEO/RUB	
NEO/SBR	
NITRILE	Good Resistance/Limited Data.
NITRILE/PVC	
PE	Poor Resistance/Limited Data.
POLYCARB	
PVA	
PVC	Good Resistance/Limited Data.
RUBBER	Good Resistance/Limited Data.
RUB/NEO/NBR	
RUB/NEO/SBR	
SARANEX	
SBR	
VITON	Poor Resistance/Limited Data.
VITON/NEO	

NONFIRE RESPONSE:

Keep material out of water sources and sewers. Attempt to stop leak if without hazard. Use water spray to knock-down vapors. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Neutralize with vinegar or other dilute acid. Water spill: Neutralize with dilute acid or removable strong acid. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates. Air spill: Apply water spray or mist to knock down vapors. Vapor knockdown water is corrosive or toxic and should be diked for containment. ((C)AAR, 1986)

HEALTH HAZARDS:

Vapors cause irritation of eyes and respiratory tract. Liquid will burn skin and eyes. Poisonous; may be fatal if inhaled. Contact may cause burns to skin and eyes. Contact with liquid may cause frostbite. Signs and Symptoms of Exposure: Vapors cause irritation of the eye and respiratory tract. High concentrations cause conjunctivitis, laryngitis and pulmonary edema, possibly accompanied by a feeling of suffocation. Contact with the skin causes burns and blistering. If absorption becomes extensive, coma may arise preceded by convulsions. Ammonia has a greater tendency than other alkalies to penetrate and damage the eye, and to cause cataracts. (EPA, 1986)

FIRST AID:

Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Remove and isolate contaminated clothing and shoes at the site. In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. Do not rub affected areas. (EPA, 1986)

FLASH POINT:
Not Applicable. Not flammable under conditions likely to be encountered. (CG, 1985)

LOWER EXPLOSIVE LIMIT:
16 % (EPA, 1986)

UPPER EXPLOSIVE LIMIT:
25 % (EPA, 1986)

AUTO IGNITION TEMPERATURE:
1204 Deg F (USCG, 1985)

MELTING POINT:
-107.9 Deg F (EPA, 1986)

VAPOR PRESSURE:
400 mm Hg @ -49.72 Deg F (EPA, 1986)

VAPOR DENSITY (AIR = 1):
0.6 (EPA, 1986)

SPECIFIC GRAVITY-LIQUID (H2O=1):
0.6818 @ -28.03 Deg F (EPA, 1986)

SPECIFIC GRAVITY-SOLID (H2O=1):

BOILING POINT:
-28.03 Deg F (EPA, 1986)

MOLECULAR WEIGHT:
17.03 (EPA, 1986)

IDLH:
500 ppm (NIOSH, 1987)

TLV - TIME WEIGHTED AVERAGE:
25 ppm ((C)ACGIH, 1986)

TLV - SHORT TERM EXPOSURE LIMIT:
35 ppm ((C)ACGIH, 1986)